machine (3)

ACME-HEF

ESDI HARD DISK CONTROLLER

Introduction

The ACME-HEF Winchester/Floppy Disk Controller interfaces two ESDI hard disk drives and two floppy disk drives (5.25- or 3.5-inch floppy) to a PC-AT system processor. Both hard disk drives can have different ESDI transfer rates up to 24 megabits per second.

Features

- 24 Mbits per second ESDI support.
- 1:1 interleave capability even with 24 Mbits per second ESDI drives.
- Supports >1024 cylinder drives.
- 17, 63 and physical Sector Mapping.
- Supports > 528 megabytes drives.
- Supports different ESDI transfer rates.
- Supports both hard and soft sector ESDI drives.
- Jumper Disabling of Onboard Floppy Controller.
- Jumper Disabling of Onboard Floppy Writing.
- DOS, Xenix, Unix, Novell, OS/2 Compatible.

Hardware Installation

1. **Verification of the ESDI Drive Jumper Configuration.**
   a. Verify and set the drive select jumper on the drive as belows:
      — If a **straight** 34-pin control cable is used, set the jumper on the first drive as "drive-select 1", and the jumper on the second drive as "drive-select 2".
      — If a **twisted** 34-pin control cable is used, set the jumper on the first drive as "drive-select 1", and the jumper on the second drive **also** as "drive-select 1".
   b. Install the drive termination resistors *only on the drive that is at the end of the SCSI chain.*
   c. Set the jumper to spin **up** the drive motor upon power on.

2. **Controller Jumper Configuration.**
Please refer to Figure 1 to configure your system.

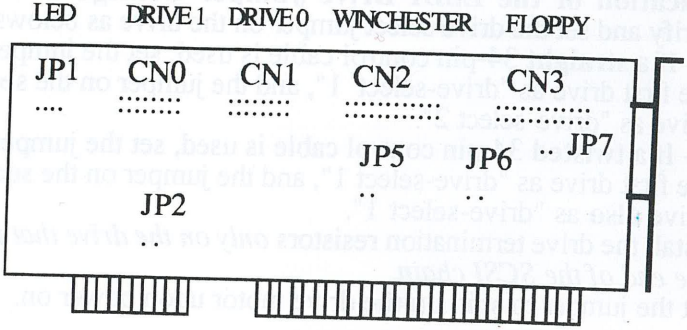

Figure 1

CN0 — Drive 1 Data Signal Connector
CN1 — Drive 0 Data Signal Connector
CN2 — Hard Disk Drive Control Signal Connector
CN3 — Floppy Drive Connector
JP1 — Hard Disk Activity Connector
JP2 — IREQ Selection
•—• • ← IREQ 14 (Factory Setting)
• •—• ← IREQ 15
JP5 — Enable/Disable Onboard Floppy Controller Selection
•—• ← Enable (Factory Setting)
• • ← Disable
JP6 — BIOS Address Setting
•—• ← C800:0 (Factory Setting)
• • ← CC00:0
JP7 — Enable/Disable Write Protect of the Floppy Drive
• • ← Enable
•—• ← Disable

3. Cable Connection and System Integration

After the controller and the drives are properly configured, connect all the necessary cables according to the following steps with the system's power off.

a. Connect the drives' power cables to the system power supply.
b. Connect the 34-pin daisy chained flat cable from the drives to CN2 connector on the controller.
c. Connect the 20-pin flat ribbon cable from the first drive to CN1 connector on the controller. Connect another 20-pin flat cable from the second drive to CN0 connector on the controller.
d. Connect the 34-pin daisy chained floppy drive's flat cable to CN3 connector on the controller. (Connect the floppy drive's power cable to the system power supply.)
e. Connect the drive activity LED cable from the system panel to JP1 on the controller.
f. Remove the bracket from an empty expansion slot (and use the bracket screw in the next step).
g. Insert the controller card to the AT slot in the system and secure the board with the bracket screw.

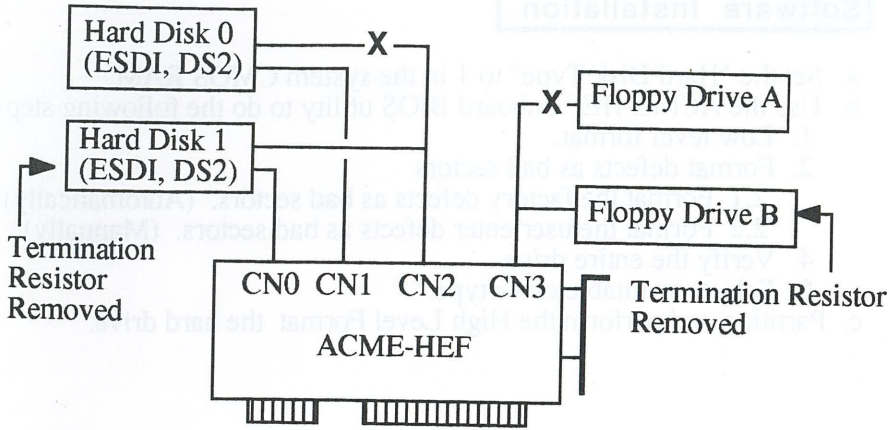
Hard Disk 0
(ESDI, DS2)
X
Hard Disk 1
(ESDI, DS2)
X
Floppy Drive A
Floppy Drive B
Termination
Resistor
Removed
CN0 CN1 CN2 CN3
ACME-HEF
Termination Resistor
Removed

Figure 2

Software Installation

a. Set the "Hard Disk Type" to 1 in the system CMOS RAM.
b. Use the ACME-HEF onboard BIOS utility to do the following steps:
    1. Low level format.
    2. Format defects as bad sectors
        2.1 Format the factory defects as bad sectors. (Automatically)
        2.2 Format the user enter defects as bad sectors. (Manually)
    4. Verify the entire drive.
    5. Selects a suitable drive type.
c. Partition and perform the High Level Format the hard drive.

ACME-HEF BIOS Utility

a. Place your DOS system diskette in Drive A and turn on your system.
   At the "A:>" prompt type "DEBUG" and press the "ENTER" key.
b. At the program prompt "—", type "`G = C800:5`" *when JP6 is shorted*; if JP6 is open, please type "`G = CC00:5`".
C. The ACME-HEF BIOS offers these features:
   1. HELP—software installation HELP menu.
   2. Low Level Format—the drive is formatted according to the number of physical drive parameter.
   3. Mark Defect List
      3-1. Automatically—reads the manufacture's defect list for each head and identifies and marks bad sectors.
      3-2. Manually—allows the user to enter the list of media defects provided by the manufacturer. Use this routine if you are unable to enter the defects automatically.

4. Verify—quick media verification and format the grown defects as bad sectors.
5. Set the drive type and Exit—five possible options for defining the drive type. The drive type can be changed by using the "↑" and "↓" keys.
   - ◊ **No Drive Present**
   - ◊ **Non-translation**: This option uses the drive's actual physical parameters. The maximum number of cylinder is 1023.
   - ◊ **Translation - 17 SPT**: When the system does not support drives with SPT values greater than 17 SPT.
   - ◊ **Translation - 63 SPT**: Translation provides greater use of the drive's capacity even though most types of AT BIOS recognize only a maximum of 1024 cylinders.
   - ◊ **Special Non-translation**: When your drive has more than 1023 cylinders and you are using a custom device drive or operating system to obtain full usage of your ESDI drive.

Disk Partition and High Level Format

a. **MS-DOS (FDISK and FORMAT)**
   1. Use "FDISK" to partition your hard disk drive.
      If your version of MS-DOS does not support the creation of multiple logical drives, disk enhancement software drivers can be used to obtain the full usage of your high capacity drive, or you may wish to upgrade your operating system.
   2. Use the "FORMAT" command to perform high level formatting of the drive.

b. **SCO Xenix**
   Previous versions of the SCO Xenix assumed 17 SPT. If you have an old version, use the "17 Sector Translation" option provided by the ACME-HEM BIOS utility.

c. **NOVELL NETWARE**

a. If you are using NetWare 2.0a, you must select the "17 SPT" drive type offered by the ACME-HEF BIOS utility.

b. If you are using NetWare 2.1 or later versions, any number of sectors per track is permissible.

[NOTE]: When running CompSurf, answer the questions as described below:

Format The Disk.....NO
Maintain The Current Media Defect List.....YES
Number Of Sequential Passes.....1
Number Of I/O Random Test....."ENTER" to Use Default
Are The Parameters Correct.....YES

Cyl.	Hand	SPT
1149	7	36